

**PLEASE TYPE THE PROPOSED AMENDMENT BELOW.** If you propose to change a section, please copy the original text from either the relevant model code and/or MA amendment and indicate the code edition. Indicate, with a strikethrough, the text that you propose to delete. Please also indicate any new text in both *italic* and **red** font.

Finally, for each proposal submitted, please provide the justification items requested below. Completed code amendment forms may be emailed to Dan Walsh, Director of Code Development and Manufactured Buildings at [Dan.P.Walsh@mass.gov](mailto:Dan.P.Walsh@mass.gov).

**Please attach additional pages as necessary.**

**Existing language – Chapter 51:**

**R403.6 Mechanical Ventilation (Mandatory).** Outdoor air intakes and exhausts shall have automatic or gravity dampers that close when the ventilation system is not operating. Each dwelling unit of a residential building shall be provided with continuously operating exhaust, supply or balanced mechanical ventilation that has been site verified to meet a minimum airflow per:

1. **R406.3** Equation 4-1:

Ventilation rate, CFM = (0.01 x total square foot area of house) + [7.5 x (number of bedrooms + 1)];

**R406.3 Energy Rating Index.** The Energy Rating Index (ERI) shall be determined in accordance with RESNET/ICC 301, the **ERI Reference Design Ventilation rate shall be in accordance with Equation 4-1.**

**Proposed Changes – Chapter 51:**

**R403.6 Mechanical Ventilation (Mandatory).** Outdoor air intakes and exhausts shall have automatic or gravity dampers that close when the ventilation system is not operating. Each dwelling unit of a residential building shall be provided with continuously operating exhaust, supply or balanced mechanical ventilation that has been site verified to meet a minimum airflow per:

1. ~~R406.3~~ Equation 4-1:

Ventilation rate, CFM = (0.01 x total square foot area of house) + [7.5 x (number of bedrooms + 1)];

**R406.3 Energy Rating Index.** The Energy Rating Index (ERI) shall be determined in accordance with RESNET/ICC 301-~~2019~~, ~~the ERI Reference Design Ventilation rate shall be in accordance with Equation 4-1.~~

**Referenced Standards**

ANSI/RESNET/ICC 301-~~2014~~**2019**: Standard for the Calculation ...

### Existing language – Chapter 13:

**C407.3 ERI-based Compliance.** Compliance based on an ERI analysis requires that the rated design be shown to have an ERI less than or equal to 55 when compared to the ERI reference design prior to credit for onsite renewable electric generation. The Energy Rating Index (ERI) shall be determined in accordance with RESNET/ICC 301, the ERI Reference Design Ventilation rate shall be in accordance with Equation 4-1.

### Proposed changes – Chapter 13:

**C407.3 ERI-based Compliance.** Compliance based on an ERI analysis requires that the rated design be shown to have an ERI less than or equal to 55 when compared to the ERI reference design prior to credit for onsite renewable electric generation. The Energy Rating Index (ERI) shall be determined in accordance with RESNET/ICC 301-2019, the ERI Reference Design Ventilation rate shall be in accordance with Equation 4-1.

### Background and rationale:

The goal of this code change proposal is to bring the ICC ERI and the RESNET HERS rating back into alignment so that an ERI of 55 is the same as a HERS rating of 55. These two were in alignment under the MA amended IECC2015 and we believe that maintaining that consistency in the IECC2018 will be simpler for the public as well as for builders, HERS raters and code officials. There are two changes that this code change proposal makes to achieve that goal.

1. The ICC change: remove reference to equation 4-1 for ventilation.  
When the IECC updated from 2015 to 2018, it added language that stipulates that when using the ERI method the minimum home ventilation rate should be calculated in accordance with equation 4-1. This equation results in a higher ventilation rate in new homes than is typical with ASHRAE 62.2 or other methods allowed by the RESNET 301-2014 or 301-2019 standard. As a result, the IECC2018 ERI language and the RESNET HERS rating (which were previously aligned) now produce different scores for the same home. In particular, the ERI score is typically a few points higher, making it harder to achieve the ERI 55 level than achieving a HERS 55.
2. The RESNET change: update code reference from the 2014 standard to the 2019 standard.  
RESNET updated the HERS & ERI rating standard: ANSI/RESNET/ICC Standard 301 from the 2014 version to the 2019 version. As the timing indicates the newer 301-2019 standard was finalized after the IECC2018 and so the 1<sup>st</sup> edition publication of the IECC2018 references the older standard 301-2014. RESNET has allowed a transition period for their software providers to update to the 301-2019 standard which ended this summer, and as of Jan 1, 2021 all official HERS ratings have to use the updated 301-2019 standard. Both ICC staff and RESNET staff recommend that in our state adoption we update the IECC2018 referenced standards section to adopt the newer 301-2019 standard not the 301-2014. This will again help with

maintaining consistency between the HERS rating and the IECC ERI, since HERS raters have effectively already made the change.

In terms of differences between the 2014 version and the 2019 version, the main change appears to be the introduction of a size adjustment factor for smaller homes. This makes it easier to achieve a HERS 55 in a small home under the 2019 standard than under the 2014 standard. The size adjustment factor makes no change to larger homes.

Finally, the ERI approach is available in both the residential code (Chapter 51) and for R-use commercial buildings in the commercial code (Chapter 13), hence the code change proposal makes identical changes to both chapters as shown above.

**Pros of the proposed change:**

In summary, the two changes serve to realign the HERS and ERI language in the IECC2018. Combined, these changes will simplify understanding of the ERI section of the energy code and remove the potential confusion of having 2 similar but different values for the same home. The changes also bring relief to builders in terms of reduced cost to achieve an ERI of 55, and make code compliance easier and more affordable under the ERI/HERS path. Finally the updated 301-2019 standard will make it easier for small homes to comply with the ERI path – bringing the level of energy efficiency more in line with what is needed for larger homes, where in the past it was reported that it was slightly more difficult for small homes to achieve the same HERS 55 level.

**Cons of the proposed change:**

This change will marginally increase energy use in many homes using the ERI path relative to keeping the ERI ventilation language as published in the IECC2018. Our understanding is that it typically equates to a 2-3 HERS point difference. While DOER generally supports improvements in energy efficiency, we did not intend for the ERI 55 code requirements to increase stringency between the IECC2015 and IECC2018 in this way, and recommend that avoiding market confusion is more important in this case.

**Estimated impact on life safety:**

No known life safety impacts.

**Estimated impact on cost:**

Modest cost savings for residential units using the ERI compliance path that are close to the HERS 55 compliance level. No cost impact for homes that are significantly lower than HERS 55.